

REMARKS

This application has been carefully reviewed in light of the Office Action dated November 20, 2002 (Paper No. 9). Claims 47 to 50, 53, 54, 56 and 58 to 63 are in the application, of which Claims 47 to 50 have been allowed. Of the remaining claims, Claim 53 is the sole independent claim. Reconsideration and further examination are respectfully requested.

Applicants thank the Examiner for his indication that Claims 47 to 50 have been allowed, and for his further indication that Claims 62 and 63 contain allowable subject matter but have been objected to for their dependency on a rejected base claim. These claims have not been rewritten, however, since it is believed that the base claim is also in condition for allowance, as detailed more fully below.

Claim 60, which objected to for formal reasons, has been amended.

Applicants note that the proposed drawing corrections, dated August 26, 2002, have been approved. In accordance with this indication, new formal drawings are submitted herewith.

Claims 53, 54, 56 and 58 to 61 were rejected under 35 U.S.C. § 103(a). In particular, Claims 53, 54 and 59 to 61 were rejected over U.S. Patent 5,509,140 (Koitabashi) in view of U.S. Patent 6,099,101 (Maurelli) and U.S. Patent 5,179,389 (Arai); Claim 56 was rejected further in view of U.S. Patent 5,956,061 (Ahn); and Claim 58 was rejected further in view of U.S. Patent 5,136,309 (Iida).

The rejections are respectfully traversed. The hypothetical combinations proposed in the Office Action ignore technological incompatibilities and inconsistencies

between the applied references, such that these hypothetical combinations would not have commended themselves to those of ordinary skill in the art. For example, the invention of the rejected claims involves a gas-liquid exchange operation based on information from a sensor, yet the applied Koitabashi patent does not operate like this, nor is the sensor of Maurelli concerned with gas-liquid exchange. In view of these manifest and fundamental technological differences, the hypothetical combination proposed in the Office Action would not, under any circumstances, have been obvious to those of ordinary skill in the art, as detailed more fully below.

One embodiment of the rejection of rejected Claim 53 is illustrated in Figures 42 and 43 of the present application. These figures show the arrangement of an ink tank having two chambers. The first chamber includes a first monitor means such as a solid semiconductor element having a pressure sensor for detecting a pressure fluctuation, and further contains an absorption member. A flow rate adjustment apparatus, such as a solid semiconductor element having an open/close valve is provided at a connection path 50b.

A pressure signal is received from the first monitor and a flow rate of ink flowing in connection path 50b from an ink chamber (the second chamber) to the absorption member chamber is adjusted by the open/close valve.

Referring to Figures 42 and 43, in a case where a liquid surface of the absorption member chamber reaches a limit line (illustrated as the dotted line in Figure 42) below which an ink path is possibly interrupted during a gas-liquid exchange, the first monitor means is above the liquid surface to be exposed to an atmosphere. Because ink is not present around the first monitor means, a pressure fluctuation is caused, which is

detected by the first monitor means to provide information to the flow rate adjustment apparatus provided to the connection path. The flow rate adjustment apparatus, receiving a pressure fluctuation information, controls the open/close valve. In other words, when reaching to a limit line at which an ink path is possibly interrupted, the open/close valve of Figure 42's flow rate adjustment apparatus is further opened to increase an ink supply amount from the ink chamber to the absorption member chamber. On the other hand, when there is a detection that the liquid surface returns to a state having no occurrence of ink path interruption, the open/close valve is narrowed so as to control ink flow to a normal flow rate, thereby maintaining a good ink supply state.

Koitabashi discloses that a groove is provided to a partitioning wall at an absorption member chamber side of an ink tank having a double chamber structure. When a pressure difference between the ink chamber and the absorption chamber is reached at a predetermined value or more, air readily passes through the groove to cause a gas-liquid exchange, thereby supplying ink from the ink chamber to the absorption member chamber.

Importantly, and unlike the invention, Koitabashi's gas-liquid exchange operation is not made by receiving information from a sensor or the like.

Maurelli discloses a single-use ink jet cartridge. Sensor 74 provided in the cartridge is connected by a wire so as to prevent overflow of the cartridge which might destroy the cartridge. Sensor 14 is utilized to detect an ink residual amount.

Maurelli is silent about communication between sensors 14 and 74, but even if such details were supplied, Maurelli is silent about the use of such sensors to control an open/close valve in a connection path between chambers.

Summarizing the applied art, therefore, Koitabashi is silent about a sensor. It is silent about operating means for operating based on information received from the sensor. Maurelli's sensor is completely different from the gas-liquid exchange device of the Koitabashi ink tank. In view of these fundamental and manifest technological differences and incompatibilities, it is incomprehensible that those of ordinary skill would have considered a combination of the two to somehow have been obvious.

Withdrawal of the § 103 rejections is therefore respectfully requested.

Regarding a formal matter involving an Information Disclosure Statement, it was noted that such a statement was filed after issuance of the present Office Action. Consideration of the art cited in the Information Disclosure Statement, which is dated January 13, 2003, is respectfully requested.

No other matters being raised, it is believed that the entire application is fully in condition for allowance, and such action is courteously solicited.

Applicants' undersigned attorney may be reached in our Costa Mesa,
California office at (714) 540-8700. All correspondence should continue to be directed to
our below-listed address.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael J. Scinto", written over a horizontal line.

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